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10/552,387	10/07/2005	Hideyuki Inose	482782007600	9265
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EXAMINER				
PILKINGTON, JAMES				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/552,387

Applicant(s)

INOSE ET AL.

Examiner

JAMES PILKINGTON

Art Unit

3656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

The RCE filed on 4/21/09 is acceptable and an action on the RCE follows.

Specification

1. The amendment to the Abstract is object to since submitted correction does not comply with 37 CFR 1.121(b)(1), in particular a clean unmarked copy of the amendment needs to be submitted.

Claim Rejections - 35 USC § 112

2. Claims 1, 3-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 6 and 8 recite that the main body is "a single unitary body" however the specification does not disclose what is considered to be "a single unitary body." Figure 1 of the instant application shows a main body which is "a single unitary body" however Figures 2 and 3 show a multiple component main body. Is this multiple component main body also "a single unitary body" where the components of the body are connected by a fastening means? Since there is no disclosure in the specification of how the phrase "a single unitary body" is being construed it is not clear what embodiment of the invention the Applicant is seeking coverage for. It is believed that the Applicant is seeking coverage on the embodiment of Figure 1, based on the

telephone interview held 4/21/09, and the limitation "a single unitary body" is going to be examined as if to mean one component. However, Applicant should amend the specification to define which embodiment contains "a single unitary body." It is also noted that Claim 8 is reciting the gear arrangement shown in Figure 3 and Figure 3 shows a multiple part body which includes component 249 which is attached to the body assembly via a bolt to provide a support for the bearing which may not constitute a single unitary body pending Applicant definition of "a single unitary body." If the Applicant wishes to construe "a single unitary body" as a body which can be assembled of a number of components attached via fastening means Kobayashi is still a valid reference under 35 USC 102 (b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1) in view of Krauss, USP 4,188,833.

Re clms 1 and 3-5 Kobayashi discloses a support structure comprising:

- an input shaft (31a) and an output shaft (35) for input and output of driving force;
- the input shaft (31a) and the output shaft (35) being coupled by a power transmission (32/33);

- a pair of first bearings (ball bearing and one of the roller bearings on 31a) aligned in an axial direction, the first bearings rotatably supporting the input shaft (31a), the first bearings having the power transmission device (gear 32) disposed therebetween ;
- a pair of second bearings (ball bearings on 35) aligned in an axial direction, the second bearings rotatably supporting the output shaft (35)
- a housing member (casing) for housing the input shaft (31a), the output shaft (35), the first bearings, the second bearings, the power transmission device (32/33) and the change-direction transmission device (30/31), the housing member including a main body (9 and insert around roller bearings of shaft 31a) which supports one of the first bearings and one of the second bearings
- the power transmission device (gear 32) is disposed so as to respectively abut shaft side members (inner races of the roller bearing and ball bearing) of the pair of the first bearings
- the main body comprises a wall portion (insert of 9 holding bearings) one of the first bearings is rotatably supported by the wall portion
- the wall portion (insert of 9 holding bearings) further comprises an opening (Fig 1), and the input shaft (31a) penetrates the opening so as to be coupled with the output shaft (35)

Kobayashi does not disclose that the main body of the housing is a single unitary body which supports one of the first bearings and one of the second bearings.

Krauss teaches a housing main body (5) which is formed of a single unitary body which supports one bearing of a first set (bearings on 20/23) and one bearing of a second set (bearings on 10) and also supporting an input shaft and an output shafts (10 and 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kobayashi and provide a housing main body which is formed as a single unitary body which supports one of the first bearings and one of the second bearings, as taught by Krauss, since substituting a multiple part body for a single part body yields the predictable result of simplifying assembly and disassembly since there is few components to handle. In addition, it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

Re clms 6 and 7, Kobayashi discloses a *gear mechanism*:

- a change-direction gear set (30/31) to change a rotation direction of a driving force at a right angle, the change-direction gear set (30/31) comprising a first change-direction gear (30) and a second change-direction gear (31)
- an input shaft (31a) rotating coaxially and integrally with the second change-direction gear (31)
- an output shaft (35) disposed in parallel with the input shaft (31a)
- a power transmission (32/33) device coupling the input shaft (31a) with the output shaft (35);

- a pair of first bearings (ball bearing and one of the roller bearings on 31a) aligned in an axial direction, the first bearings rotatably supporting the input shaft (31a), the first bearings having the power transmission device (gear 32) disposed therebetween ;
- a pair of second bearings (ball bearings on 35) aligned in an axial direction, the second bearings rotatably supporting the output shaft (35)
- a pair of third bearings (roller bearings on 26R/34) rotatably supporting the first change-direction gear (30)
- a housing member (casing) for housing the input shaft (31a), the output shaft (35), the first bearings, the second bearings, the third bearings and the power transmission device (32/33), the housing member including a first housing member (9 and insert around tapered bearings of shaft 31a), a second housing member (below 9 and the insert in Figure 1), and a third housing member (to the left of 9 in Figure 1, holding differential), the first housing member which supports one of the first bearings, one of the second bearings and one of the third bearings
- another of the pair of the first bearings and another of the pair of the second bearings are housed in the second housing member (lower ball bearings), and another of the pair of the third bearings is housed in the third housing member (roller bearing on 26R).

Kobayashi does not disclose that the main body of the housing is a single unitary body which supports one of the first bearings and one of the second bearings.

Krauss teaches a housing main body (5) which is formed of a single unitary body which supports one bearing of a first set (bearings on 20/23) and one bearing of a second set (bearings on 10) and also supporting an input shaft and an output shafts (10 and 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kobayashi and provide a housing main body which is formed as a single unitary body which supports one of the first bearings and one of the second bearings, as taught by Krauss, since substituting a multiple part body for a single part body yields the predictable result of simplifying assembly and disassembly since there is few components to handle. In addition, it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

5. Claims 8-11, 14, and 15, rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1), in view of Hideyo, JP 59-069553 and further in view of Krauss, USP 4,188,833.

Kobayashi discloses a gear mechanism comprising:

- a change-direction gear set (30/31) to change a rotation direction of a driving force at a right angle, the change-direction gear set (30/31) comprising a first change-direction gear (30) and a second change-direction gear (31);
- a first gear (32) rotating coaxially and integrally with the second change-direction gear (31)

- a second gear (33) disposed in parallel with and engaged with the first gear (32)
- a casing (see Fig 1) housing the change-direction gear set (30/31) and the gears (32 and 33), the casing including a main body (9 and insert) which rotatably supports the change-direction gear set (30/31) and the gears (32/33), and covers (below 31a and outer wall of 10) for covering the main body (9) so as to house the change-direction gear set (30/31) and the gears (32, 33)
- the first change-direction gear (30) coupled with an output of a transmission of a vehicle and a seal (27) to prevent intrusion of oil in the transmission.
- a pair of bearings (above and below 32) wherein the first gear (32) is disposed between the pair of the bearings
- the first and the second change-direction gears (30 and 31) are rotatably supported by a pair of bearings receiving force in an axial direction (see Fig 1)
- the first gear (32) is disposed between a pair of bearings (one below and one of the bearings above the gear) rotatably supporting the second change-direction gear (31)

Kobayashi does not disclose a second gear engaged with the first with a third gear being arranged in parallel and engaged with the second gear and wherein the first gear is smaller in diameter than the bearings.

Hideyo teaches a change-direction gear arrangement which has a second gear (8) in parallel and engaged with a first gear (7) and a third gear (9) arranged in parallel

and engaged with the second gear (8) and wherein the first gear (7) is smaller in diameter than the bearings (see Fig 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kobayashi and use a three gear reduction stage and to make the first gear smaller in diameter than the bearings, as taught by Hideyo, since substituting a two gear reduction stage for a three gear reduction stage would yield the predictable result of driving the output mechanism and a changing in the gear size would result in a modified gear reduction ratio.

Kobayashi in view of Hideyo does not disclose that the main body of the housing is a single unitary body which supports one of the first bearings and one of the second bearings.

Krauss teaches a housing main body (5) which is formed of a single unitary body which supports one bearing of a first set (bearings on 20/23) and one bearing of a second set (bearings on 10) and also supporting an input shaft and an output shafts (10 and 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kobayashi in view of Hideyo and provide a housing main body which is formed as a single unitary body which supports one of the first bearings and one of the second bearings, as taught by Krauss, since substituting a multiple part body for a single part body yields the predictable result of simplifying assembly and disassembly since there is few components to handle. In addition, it has been held that

forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1), in view of Hideyo, JP 59-069553 and Krauss, USP 4,188,833, and in view of Palazzolo, USP 6,605,018.

Kobayashi in view of Hideyo and Krauss discloses all of the claimed subject matter as applied above.

Kobayashi in view of Hideyo and Krauss does not disclose a plane formed by a rotation axis of the first gear and a rotation axis of the second gear and another plane formed by the rotation axis of the second gear and a rotation axis of the third gear form an angle smaller than 180 degrees and the rotation axis of the third gear is disposed in a direction away from the rotation axis of the first change-direction gear, the second gear and the third gear are disposed offset in respective perpendicular directions relative to the a rotation axis of a power transmission member coupled with the first change-direction gear, a rotation axis of the first gear is disposed offset in a direction away from the first change-direction gear, a rotation axis of the second gear is disposed offset in a direction closer to the first change-direction gear than the rotation axis of the first gear, and a rotation axis of the third gear is disposed offset in a direction more distant from the first change-direction gear than the second gear.

Palazzolo teaches a plane formed by a rotation axis of the first gear (see at least Fig 1A and 1B item 40) and a rotation axis of the second gear (see at least Figs 1A and

1B item 38) and another plane formed by the rotation axis of the second gear (see at least Figs 1A and 1B item 38) and a rotation axis of the third gear (see at least Figs 1A and 1B item 28) form an angle smaller than 180 degrees and the rotation axis of the third gear is disposed in a direction away from the rotation axis of the first change-direction gear (see at least Figs 1A and 1B item 56), the second gear and the third gear are disposed offset in respective perpendicular directions relative to the a rotation axis of a power transmission member coupled with the first change-direction gear (see at least Fig 1B), a rotation axis of the first gear is disposed offset in a direction away from the first change-direction gear (see at least Fig 1B), a rotation axis of the second gear is disposed offset (see at least Fig 1B) in a direction closer to the first change-direction gear than the rotation axis of the first gear, and a rotation axis of the third gear is disposed offset in a direction more distant from the first change-direction gear than the second gear (see at least Fig 1B).

It would have been obvious to one skilled in the art at the time of the invention was made to modify Kobayashi in view of Hideyo and Krauss and provide a plane formed by a rotation axis of the first gear and a rotation axis of the second gear and another plane formed by the rotation axis of the second gear and a rotation axis of the third gear form an angle smaller than 180 degrees and the rotation axis of the third gear is disposed in a direction away from the rotation axis of the first change-direction gear, the second gear and the third gear are disposed offset in respective perpendicular directions relative to the a rotation axis of a power transmission member coupled with the first change-direction gear, a rotation axis of the first gear is disposed offset in a

direction away from the first change-direction gear, a rotation axis of the second gear is disposed offset in a direction closer to the first change-direction gear than the rotation axis of the first gear, and a rotation axis of the third gear is disposed offset in a direction more distant from the first change-direction gear than the second gear, as taught by Palazzolo, for the purpose of allowing more space additional elements (C2/L16-29).

7. Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1), in view of Hideyo, JP 59-069553, and Krauss, USP 4,188,833, and further in view of Tsukasa, JP 04-203659.

Kobayashi in view of Hideyo and Krauss discloses all of the claimed subject matter as applied above.

Kobayashi in view of Hideyo and Krauss does not disclose at least any one of the first change-direction gear and the second change-direction gear comprises a regulation device (see at least Fig 1 item 68) for regulating tooth contact and pressure of the change-direction gear set by changing an axial direction.

Tsukasa teaches a change-direction gear comprising a regulation device (see at least Fig 1 item 68) for regulating tooth contact and pressure of the change-direction gear set by changing an axial direction.

It would have been obvious to one skilled in the art at the time of the invention was made to modify Kobayashi in view of Hideyo and Krauss with at least any one of the first change-direction gear and the second change-direction gear comprises a regulation device (see at least Fig 1 item 68) for regulating tooth contact and pressure

of the change-direction gear set by changing an axial direction, as taught by Tsukasa, for the purpose of regulating a position in the axial direction of the gearing (Tsukasa abstract).

8. Claim 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1), in view of Hideyo, JP 59-069553, and Krauss, USP 4,188,833, and further in view of Miller, USP 4,286,481 A.

Kobayashi in view of Hideyo and Krauss discloses all of the claimed subject matter as applied above.

Kobayashi in view of Hideyo and Krauss does not disclose that the bearings are selected from the group of cylindrical roller bearings or needle roller bearings.

Miller teaches a bearings that are selected from the group of cylindrical roller bearings and needle roller bearings (see reference character 28) in a transmission system.

It would have been obvious to one skilled in the art at the time of the invention was made to modify Kobayashi in view of Hideyo and Krauss and provide for the bearings being selected from a group of cylindrical roller bearings and needle roller bearings, as taught by Miller, since substituting one type of bearing for another is known in the art in order to provide a suitable bearing (e.g., ball bearings, roller bearings, thrust bearings, etc) based on the force and speed which they require to support.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1), in view of Hideyo, JP 59-069553, Krauss, USP 4,188,833, and Miller, USP 4,286,481, and further in view of Hickey et al. USP 4,283,963.

Kobayashi in view of Hideyo, Krauss and Miller discloses all of the claimed subject matter as applied above.

Kobayashi in view of Hideyo, Krauss and Miller does not disclose a positioning device configured to position the roller bearings in an axial direction.

Hickey teaches a positioning device configured to position the roller bearings in an axial direction (60) for the purpose of adjusting the axial position of the bearing (C4/L23-38).

It would have been obvious to one skilled in the art at the time of the invention was made to modify Kobayashi in view of Hideyo, Krauss and Miller and provide a positioning device configured to position the roller bearings in an axial direction, as taught by Hickey, for the purpose of adjust the axial position of the bearing.

10. Claim 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (PGPUB: US 2002/0078792 A1), in view of Hideyo, JP 59-069553, and Krauss, USP 4,188,833, and further in view of Yokel, USP 3,803,934.

Kobayashi in view of Hideyo and Krauss discloses all of the claimed subject matter as applied above.

Kobayashi in view of Hideyo and Krauss does not disclose that one of the first-third gears are helical gears.

Yokel teaches that helical gears can be used in a power transmission system for the purpose of providing a system where the gears can be made with less under-cut and more width across the top rear side so that it can transmit higher loads (C1/L51-55).

It would have been obvious to one skilled in the art at the time of the invention was made to modify Kobayashi in view of Hideyo and Krauss and provide helical gear teeth, as taught by Yokel, for the purpose of providing a system where the gears can be made with less under-cut and more width across the top rear side so that it can transmit higher loads.

Response to Arguments

11. Applicant's arguments with respect to claims 1 and 3-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES PILKINGTON whose telephone number is (571)272-5052. The examiner can normally be reached on Monday - Friday 7-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES PILKINGTON/
Examiner, Art Unit 3656
5/12/09

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656

